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ABSTRACT

Place-based education roots learning in real issues and needs and helps students become both academic achievers and good citizens. This article profiles programs in five states that are fostering academic achievement. The Alaska Rural Systemic Initiative (AKRSI) links Alaska Native culture and indigenous knowledge with the formal educational system and develops specialized curricula to relate basic math and science concepts to the local environment. AKRSI schools using place-based education have shown improved eighth-grade math scores over schools that do not. The Russian Mission School dramatically improved test scores and student attendance and dropout rates after local subsistence activities and Native culture were tied to the curriculum. In Tillamook, Oregon, students worked with the Oregon Department of Forestry to survey the status of logged areas and to create an interpretive walkway featuring animal tracks in concrete. At Guffey Community Charter School (Colorado), students help to gather astronomical data and monitor meteors as part of a Denver museum program. Albion, Nebraska, high school students in an entrepreneurship class raised funds to purchase and renovate an old theater and operate the theater on weekends. In Ojai, California, a Hispanic student-initiated club matches student tutors with students who need help in math, English, or computers. Sidebars outline the principles of place-based education and list related resources, most of them available online. (SV)

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Rural Roots

News, Information, and Commentary from the Rural School and Community Trust

Achieving Academic Goals Through Place-Based Learning

Students in Five States Show How to Do It

By Elaina Loveland

America's educational establishment is preoccupied with test scores and the No Child Left Behind Act, with its new testing requirements and sanctions, is just the latest pressure on teachers and their students to achieve—or else. For many teachers, the response will be to "teach to the test," drilling their students to learn just the things they need to perform well.

TILLAMOOK JUNIOR HIGH SCHOOL

Students in Tillamook, Oregon, conduct a snag survey.

It doesn't have to be that way. Ask the teachers and students who embrace "place-based" education. These educators and young learners know that when learning is rooted in real issues and needs, students can become both academic achievers and good citizens. They can meet the most rigorous academic standards while also helping to improve their communities and solve real-life problems. In this article, we profile five programs where place-based learning is helping to foster academic achievement.

"Student achievement is largely connected to what students learn about where they are living," says Ray Barnhardt, the Alaska Rural Systemic Initiative co-director and professor/director of Center for Cross-Cultural Studies at the University of Alaska Fairbanks. Barnhardt, who is also on the board of trustees of the Rural School and Community Trust, says that "place-based education, done properly, is one way of achieving the goals of accountability."

Since its inception in 1995, AKRSI has been involved in documenting student achievement in its place-based education efforts. The organization was first started with funds from the National Science Foundation that required AKRSI to document how innovations in science curricula were improving students' academic achievement. Funding from the Annenberg Rural Challenge also mandated documentation of student progress.

During the past five years, AKRSI has made great strides in proving that place-based education works. The organization has collaborated with 20 of the 48 rural school districts in Alaska to implement initiatives that enhance their mission: "to

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systematically document the indigenous knowledge systems of Alaska Native people and develop educational policies and practices that effectively integrate indigenous and Western knowledge through a renewed educational system."

AKRSI has documented eighth grade scores on CAT-5 math tests for four years with schools using place-based education showing a gain in scores over schools that do not. AKRSI districts now have 24.3 percent of their students performing in the upper quartile of the CAT-5 math test—less than one percent below the national average.

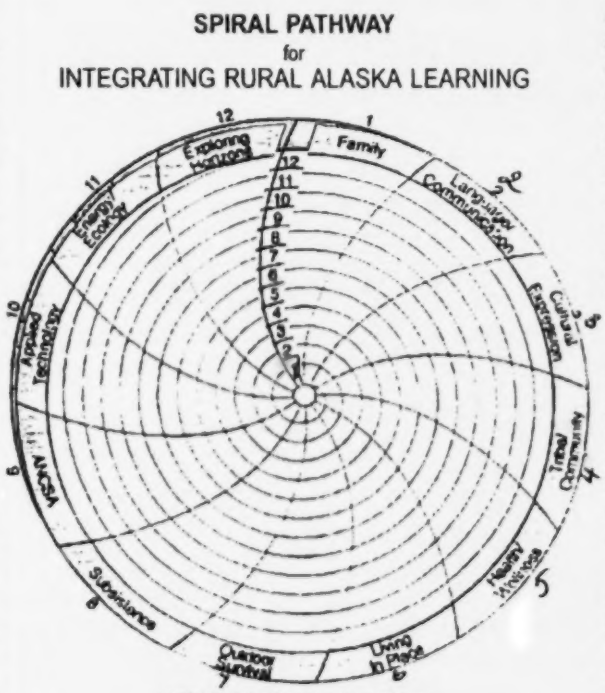
Barnhardt suggests that "educators need to make a mental shift to recognize that knowledge is not something you get from the outside and pour into kids' heads."

Students in AKRSI districts are exposed to a variety of place-based education projects that help improve their academic performance. Students participate in Native Science Fairs and create Cultural Atlases, multimedia presentations on CD-ROM or the Internet that result from students interviewing Elders in their communities and researching available documents related to indigenous knowledge systems. Students also participate with Elders in subsistence camps to learn about traditional Native subsistence activities.

AKRSI helps create curricula that focus on connecting indigenous and Western cultures and that also provide evidence for student assessment. For example, the *Alaska Standards for Culturally Responsive Schools* have been developed for students, teachers, curriculum specialists, schools and communities to provide explicit guidelines for ways to integrate the Alaska Native culture and environment into the formal education process.

Barnhardt says that the development of the *Alaska Standards for Culturally Responsive Schools* "has done more to turn things around than anything else." The organization has also developed the "Spiral Pathway for Integrating Rural Alaska Learning" curriculum framework that centers on 12 broad cultural themes to enhance student learning.

In addition, AKRSI is developing specialized math and science curricula with Elders and teachers that relate the teaching of basic science and math concepts to the surrounding environment.



The Alaska Rural Systemic Initiative's "Spiral Pathway for Integrating Rural Alaska Learning" curriculum.

AKRSI has been the leading force in improving Alaska's rural schools by setting the example that students can achieve through place-based education.

One particular rural school in Alaska has made impressive gains in academic success by implementing place-based education in recent years. Three years ago, Russian Mission School had the lowest test scores in its district and one-third of children between the ages of 12 and 16 were not attending school. Today, every school-age child is attending the school and test scores have risen dramatically. During the last academic year, all of the school's third graders received the highest scores statewide on the Alaska Benchmark test for third grade, and six seniors passed all three sections of the Alaska High School Graduation Qualifying Exam.

What caused the turnaround at Russian Mission School? Principal Mike Hull attributes the school's improvement to place-based education. "The change in the attitude about school in the middle grades has been tremendous," he says.

To combat the school's problem of students dropping out, teachers and community members developed a curriculum around the subsistence activities of each season that are part of traditional Native culture in rural Alaska. In the fall, students are sent out into two-week subsistence camps where they learn about fishing, medicinal plants, hunting, and beaver habitat. In fall 2002, students even built a cabin, which will be used for trapping in the winter. In order to document their learning, students used digital cameras, and laptop computers to create Web pages.

"They became storytellers to the global community," says Hull.

This curriculum extended into the classroom where students would read and write about local history. Students

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also had weekly visits with local experts to learn more about local culture.

"Some kids raised their reading level by more than a year in just five months," says Hull.

Achievement doesn't stop there. Students will be speaking at the Native Educators' Conference in Anchorage, Alaska in February and have also been invited to participate at an international symposium in Japan.

The success at Russian Mission School is just one victory of AKRSI's influence in schools in rural Alaska.

Most importantly, as a result of AKRSI's work, Native education is beginning to have a broader audience, which Barnhardt considers the organization's greatest accomplishment. "We've been able to bring Native educators out of the woodwork and to the forefront where they are now having a significant impact throughout rural Alaska," he says.

AKRSI is truly a model of how documenting students' academic progress in place-based education initiatives can meet accountability standards. The success at Russian Mission School is only one case where student work has improved.

School Teams Up with Oregon Department of Forestry

Tillamook Junior High School in Tillamook, Oregon, a national service-learning leadership school, is no stranger to linking place-based education and academics.

In a community where logging is an important part of the local economy, 125 math students conducted a "snag" survey over four years (1999–2002) with the Oregon Department of Forestry (ODOF). The term "snag," used by loggers, refers to tree stumps. Because loggers are required to leave a certain number of both standing trees and snags to help revitalize animal habitat, students helped calculate how many trees and stumps remained in logged areas. After measuring, students logged their findings into an ODOF mapping and data program. What the students learned about measurement and calculation allowed them to come within tenths of the actual measurements determined by professional surveyors.

TILLAMOOK JUNIOR HIGH SCHOOL

Left: Cement footprint stamps for the interpretive walkway for the Oregon Department of Forestry. Below: Tillamook student makes a cement footprint.

More recently, eighth graders at Tillamook Junior High School have embarked on a new project, creating an "interpretive walkway" for a new office building for the Oregon Department of Forestry.

The interpretive walkway is a trail leading up to the building with cement footprints of Oregon's animals leading up to the entrance. For the project, students learned about different animal tracks and used plotting and graphing skills to measure the pace of each animal. Afterward, students modeled the animal tracks on paper (8 ½ x 11) to scale (16 x 20). Students then calculated the actual volume of the cement needed to make the animal tracks, determined its cost, and applied cement "stamps" to create the animal tracks on the interpretive walkway.

The advantages of this project with the Department of Forestry are numerous, according to Jill Sumerlin, the students' eighth grade math teacher. "This has shown students how people in real walks of life use math in their everyday jobs," she says. "And it gives them the opportunity to apply statistics and measurement skills and work in research teams."

"We used math a lot in this project," says student Dylan Ray. "We used it to calculate the volume of cement and determine how much needed to be ordered to fill the space for our tracks. We did a scale model of our plan and then transferred that scale model to life-sized butcher paper. Then we had to draw our animal tracks with the correct pacing according to the scale drawing we had created."

Classmate Kapono Jacob describes the collaborative process: "We had 12 sections and a team of us worked on each section to get it done before the cement was too far gone to make the tracks. Timing was everything—we had to work together to get the job done."

Beyond learning applied math skills, students took pride in working collaboratively and doing a project in the community.

"It was fun to do something in the community," student Ali Prince says.

Student Anglica Perez looked upon the experience as something she'd always remember. "When I grow older and the building is done, I will sure come and see the tracks that we placed there and I will remember how the wolf walked or the elk tracked," she says.

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Working on the interpretive walkway was particularly memorable for James Bohnke, a student whose father is helping construct the new building. "My Dad is a contractor working on the building and I got to be there at the same time he was working. It made me feel as if I was part of the work he does and I could see how important it is to plan ahead and make sure we have everything laid out just right because with cement, you don't have much time. It has to be perfect," he says.

The interpretive walkway project has done wonders for students who were once falling behind in the classroom. "I have one particular student who had an attendance problem. She is now so motivated by this project that she never misses class and her grades are improving," says Sumerlin.

PHOTO COURTESY OF CHRIS PETERSON

Community volunteer Chris Peterson, teacher Peg Larson, and Guffey Community Charter School students stand in front of the Sky Watch camera in Guffey, Colorado.

Kris Babbs, educational specialist at the Oregon Department of Forestry, says working with schools is fundamental to the department's mission. Babbs directed the students the day they made the cement stamps for the interpretive walkway at the new office building site this past December. "I thought it would be a challenging endeavor, but it ended up working quite well," she says.

"They were able to create a sidewalk art project and enhanced the look of the new Tillamook office building," she continues. "Not only did they benefit from the learning, but it will continue to teach the visiting public."

Watching the Skies in Colorado

Two afternoons each week, K–8 students at Guffey Community Charter School in central Colorado monitor the stars in a Denver Museum of Nature & Science program called "All Sky." The museum has established a network of 11 cameras at Colorado schools to monitor and record meteorite movement across the state.

At Guffey School, the program is referred to as "Sky Watch." Working with local physicist Chris Peterson, who is also a volunteer researcher with the museum, Guffey students monitor movement of meteorites and fireballs with the Sky Watch camera, compile the data and send it back to the museum.

The Sky Watch camera was set up at Guffey Community Charter School in November 2001 after nearly a year of planning. The school was the first in the state to have a Sky Watch camera and is the only elementary school involved with the program.

"The museum had two goals with the All Sky Camera Project: to collect scientific data and involve school kids in real science," says Peterson.

According to Frank Sanders, designer of the first All Sky camera prototype, the project has enormous potential. "Now, we'll be able to calculate exact paths of fireballs through our atmosphere. We'll also be able to compute the original orbits through the solar system, estimate zones where resulting meteorites may have landed on the ground and potentially discover unrealized meteor patterns," he says.

Peterson, who finalized the camera design, says: "If you simply recorded the sky all night, someone would have to watch hours of tape just to find a few meteors. Instead, the camera is connected to a computer that constantly watches the video, saving clips of objects moving in certain ways."

The Sky Watch program at Guffey School is popular among students; nearly half the student body (15 students out of 35) participates.

"This is real science. It's authentic work," says Peg Larson, the lead teacher at Guffey School involved in Sky Watch this year. "The students are asking scientific questions, not in a vacuum, and they are writing for a purpose. This is very powerful for students. It helps a child's whole self concept and makes them enthusiastic about school."

Larson says that the school is lucky to have a community volunteer like Peterson who spends his free time helping students learn real science. "How lucky can you be?" she asks. She also notes that many schools would not create as much time in the curriculum to spend intensely studying one aspect of science. "Other schools might say, 'We only have two weeks to spend on astronomy in our science curriculum,' so they wouldn't do the project. We're very fortunate."

Entrepreneurship Class Restores and Runs Local Theater in Nebraska

An entrepreneurship class at Boone Central High School in Albion, Nebraska has taken business education to a new level: they are running a local theater. The Gateway Theatre was built in 1911 and was a relic from the past that was no longer in use. That's when approximately 21 students in an elective entrepreneurship class (grades 10–12) decided to take action. During the 2001 school year, the

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Place-Based Education: What Rural Schools Need to Stimulate Real Learning

By Robert Yager

There has never been a time when it is so clear that typical instruction wedded to textbooks and teacher lesson plans and characterized by discipline-bound classes throughout the school day must be changed. These conditions do not improve learning—they inhibit it.

Place-based education makes science, social studies, mathematics, reading, and the humanities more interesting. By integrating place into the school curriculum, learning can be seen as important for daily living: it deals with issues, enables students to participate in societal decisions, and can be related to economic improvement. Place-based education provides a real-world context that is missing from a prescribed curriculum, (i.e., strict adherence to a textbook, the recall of information or replication of specific skills that provide the instructional and assessment focus for 95 percent of typical instruction in most classrooms).

Many national standards reports are emphasizing goals that relate the core curriculum courses to life outside of school. For example, the four goals for science included in the National Science Education Standards call for developing students who:

1. experience the richness and excitement of knowing about and understanding the natural world;
2. use appropriate scientific processes and principles in making personal decisions;
3. engage intelligently in public discourse and debate about matters of scientific and technological concern; and
4. increase their economic productivity through the use of the knowledge, understanding, and skills of the scientifically literate person in their careers.

Place-based education emphasizes and provides the needed context for learning. It is not enough to organize the concepts and processes that tend to define the disciplines. It is the situation (i.e., real experiences, environmental problems, local issues) that invite mind engagement—the other missing ingredients in typical school/classroom-based programs.

TILLAMOOK JUNIOR HIGH SCHOOL

Place-based education emphasizes and provides the needed context for learning.

Many recognize the necessity of stimulating a student's mind beyond memorization if real learning is to result. The following situations illustrate context and the way pace-based education tends to succeed in capturing the interest and the minds of students.

1. Students must help define the content, often by asking questions.
2. Students must be given time to wonder and to find interesting pursuits.
3. Topics often have "strange" features that evoke questions.
4. Teachers encourage and request different views and forms of expression.
5. The richest activities are "invented" by teachers and students.
6. Students create original and public products that enable them to be "experts."
7. Students take some action as a result of their study and their learning.
8. Students sense that the results of their work are not predetermined or fully predictable (Perrone, 1994).

Rural schools can and should take the lead to integrate place-based education within school curricula. Rural schools have an advantage in that they are generally smaller, closer to nature, less bureaucratic and therefore, can be more flexible in terms of new learning models that engage students. Local contexts can enliven the school program and succeed with mind engagement of students, both of which rarely occur in school-based learning. Dealing with real problems in a local context in a rural school could provide the needed model to change the focus of education to show that place-based learning can make a real difference in students' education and in their lives.

Robert Yager is a professor of curriculum and instruction at the University of Iowa.

Reference

Perrone, V. (1994). How to engage students in learning. *Educational Leadership, 51* (5), 11–13.

A "Web of Life" in Nebraska

Nebraska's Teacher of the Year, Suzanne Ratzlaff, a fourth grade teacher at Heartland Community Schools in Henderson, will be participating in a ceremony for the graduating high school senior class to cut the "Web of Life" they did as a class project in her fourth grade class.

In the mid 1990s, when this year's Heartland seniors were in Ratzlaff's fourth grade class, she created a "Web of Life" based on a Native American book, *Brother Eagle, Sister Sky.* The quote by Chief Seattle, "We did not weave the web of life, we are merely a strand in it. Whatever we do to the web, we do to ourselves," inspired the idea. A fourth grader suggested that the web was like their classroom—their class was their own web and how each member acted impacted the web of the class because they were a community. To illustrate the concept, Ratzlaff created an actual "Web of Life" using a hula hoop and string.

"Every time a student behaved badly, I cut a piece of the web," says Ratzlaff. "And when a student accomplished something or learned from a mistake, I made knots to show growth."

At the end of the year, Ratzlaff asked her fourth graders what she should do with their Web of Life. They told her that they wanted her to save it until their senior year, and then cut a piece of it for each student as a keepsake.

In May, Ratzlaff and her former fourth grade class will have a Web of Life cutting ceremony where she will distribute a piece of the web to each of her former students. "My hope is that there will be enough knots to give one to each student," she says.

BOONE CENTRAL HIGH SCHOOL

Left: Students in the Gateway Theatre in Albion, Nebraska. Below: The grand opening of the Gateway Theatre.

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students raised funds and purchased the theater for $37,000 on January 18, 2002. After renovations, the theater had its grand opening in May 2002. Nebraska Senator Vicki MacDonald and the mayor of Albion, Jim Tisthammer, participated in the "film" cutting ceremony at the grand opening.

Today, students and community volunteers operate the theater after school and on weekends.

"Being in the entrepreneur class has widened my horizons—it has helped me become more confident in public speaking, and taught me how to write minutes for meetings," says junior Cassie Olson.

Classmate Brent Bygland, also a junior, agrees. "Through this class I have learned the responsibilities of opening and running a successful business," he says.

Lisa Carder, entrepreneurship teacher at Boone High School, says that the experience has been a positive one for students. She says that opening the theater has helped students perform better academically. "Strong students will be strong no matter what. But introverted students become more confident with projects like these and the result is improved academic performance," she says. "Math and computer curricula tie in to the project and students understand that."

Besides students, many local volunteer groups work at the theater and they receive $150 per weekend for their services. This provides a means for organizations to raise funds without having to solicit from the community. Groups that have participated include 4-H clubs, Future Business Leaders of America, church groups, Girl Scouts, Albion Volunteer Fire Department, Lions Club, and Kiwanis Club.

Students Fostering Achievement in California

When it comes to improving academic performance, it's not just the adults who want to see results. At Nordhoff High School in Ojai, California, three students—senior Azucena "Susie" Ortiz and juniors Claudia

Martinez and Leticia Ortiz—have taken matters into their own hands by starting Union Hispana, a student-to-student tutoring club.

The club, which began in fall 2002, matches students with strengths in certain academic subjects to serve as tutors to other students who need help in those areas.

Janice McCormick, a Nordoff guidance counselor, says that what's unique about Union Hispana is that is was completely student initiated. "One of the founders, Azucena Ortiz, told me she wanted to leave something behind when she left the school," she recalls.

"We began the Union Hispana because we decided we didn't want to be minority anymore and we want to succeed," says co-founder Azucena Ortiz. "At school we noticed how not many of the Hispanic students attending school knew how to even turn on a computer. Most haven't even passed the proficiency test required to graduate. So we had to do something to help them," she continues.

To improve academic achievement, three students in Ojai, California, formed Union Hispana, a student-to-student tutoring club.

More than 150 students—more than half of the high school's student body—attended the first meeting of Union Hispana.

The focus is on English, math and computers, although tutors are willing to help students in any subject area.

The members of the club named the group Union Hispana. "Since most of us are Hispanics and we are all uniting, the name Union Hispana (Hispanic Union) came into our heads," says Ortiz.

Currently, the group helps mostly Hispanic youth, but they help any student regardless of ethnic origin.

The immediate goal for Union Hispana this year is to have each student in the senior class graduate.

Ortiz has high hopes for students who will benefit from Union Hispana's tutoring services. "We really want to see more students get past high school and into college and beyond that also," she says. "We want them to focus on their future and what they want to become.

Resource Center

Articles

"Competencies that Count: Strategies for Assessing High-Performance Skills" by Lilli Allen. Available online at http://www.alliance.brown.edu/pubs/comp_count/comp_sahps.pdf

"A Close Look at Student Work in Small Schools" from What Kids Can Do. Available online at http://www.whatkidscando.org/smallschools/intro.html

"The Digital Portfolio: A Richer Picture of Student Performance" by David Niguidula, Coalition of Essential Schools. Available online at http://www.essentialschools.org/cs/resources/view/ces_res/225

"High Standards for Essential Learning Demand a Mix of Measures" by Kathleen Cushman, *Horace*. Volume 16, Number 3, June 2000. Available online at http://www.essentialschools.org/cs/resources/view/ces_res/179

" 'Trusting' School Community Linked to Student Gains" by Catherine Gewertz, *Education Week*, October 16, 2002. Available online at http://www.edweek.org/ew/ewstory.cfm?slug=07trust.h22

Books and Reports

100 Days of Learning in Place: How a Small School Utilized "Place-Based" Learning to Master State Academic Standards by James Lewicki, Rural School and Community Trust, June 2000. Available free from the Rural Trust.

Alaska Standards for Culturally Responsive Schools published by the Alaska Native Knowledge Network, available online at http://www.ankn.uaf.edu/standards/

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Bibliography on Assessment: Factors that Influence Achievement from Northwest Regional Education Laboratory, 1996

Learning Outside the Lines: Six Innovative Programs that Reach Youth, What Kids Can Do, available online at http://www.whatkidscando.org/intheirownwords/LearningLines.pdf

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Web Sites

Alaska Rural Systemic Initiative http://www.ankn.uaf.edu
Cloudbait Observatory http://www.cloudbait.com
Coalition for Essential Schools http://www.essentialschools.org
Denver Museum of Nature & Science http://www.dmns.org
Project Zero http://www.pzweb.harvard.edu
What Kids Can Do http://www.whatkidscando.org

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